

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
16 June 2005 (16.06.2005)

PCT

(10) International Publication Number
WO 2005/054953 A3

(51) International Patent Classification⁷: G03F 7/20

(21) International Application Number:
PCT/EP2004/0 13228

(22) International Filing Date:
22 November 2004 (22.11.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/719,683 24 November 2003 (24.11.2003) US
103 56 730.5 2 December 2003 (02.12.2003) DE

(71) Applicants (for all designated States except US):
CARL-ZEISS SMT AG [DE/DE]; Carl-Zeiss-Strasse 22,
73447 Oberkochen (DE). ASML NETHERLANDS B.V.
[NL/NL]; De Run 6665, NL-5504 DT Veldhoven (NL).

(72) Inventors; and

(75) Inventors/Applicants (for US only): GELLRICH,
Bernhard [DE/DE]; Schnaitbergstr. 3, 73434 Aalen
(DE). WURMBRAND, Andreas [DE/DE]; Sonnen-
halde 16, 73434 Aalen-Reichenbach (DE). KUGLER,
Jens [DE/DE]; Goetzenbachstr.1, 73540 Heubach
(DE). SCHOEPPACH, Armin [DE/DE]; Schlehenweg
50, 73431 Aalen (DE). ZENGERLING, Christian
[DE/DE]; Rodemannstr. 9d, 99974 Muehlhausen (DE).
BRUYNOOGHE, Stephane [DE/DE]; Kanstr. 83, 73431
Aalen (DE).

(74) Agent: LORENZ, Werner; Alte Ulmer Strasse 2, 89522
Heidenheim (DE).

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW

(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE,
SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,
GW, ML, MR, NE, SN, TD, TG).

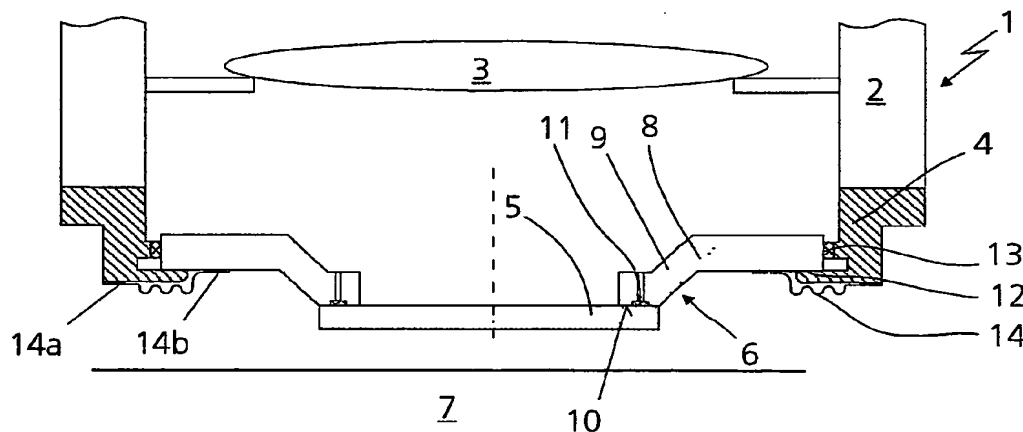
Declarations under Rule 4.17:

— as to the identity of the inventor (Rule 4.17(V)) for all des-
ignations

— as to applicant's entitlement to apply for and be granted
a patent (Rule 4.17(U)) for the following designations AE,
AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ,
CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE,
EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS,
JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA,
MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM,
PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ,

[Continued on next page]

(54) Title: HOLDING DEVICE FOR AN OPTICAL ELEMENT IN AN OBJECTIVE



(57) Abstract: A holding device (6) for an optical element (5) in an objective (1) has a mount (4) that is connected to the objective (1), on the one hand, and at least indirectly to the optical element (5), on the other hand. Arranged between the mount (4) and the optical element (5) is a reinforcing element (8) whose coefficient of thermal expansion corresponds substantially to the coefficient of thermal expansion of the optical element (5).

WO 2005/054953 A3



TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(Ui)) for all designations

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
5 January 2006

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.